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92. Proposed by JOSIAH H. DRUMMOND, LL. D., Counselor at Law, Portland, Maine.

Let $ABCD$ be a quadrilateral inscribed in a circle. Draw the diagonals AC and BD. Show that $AB.BC : DC.AD = BD : AC$. [From a note in *Young's Geometry*, edition of 1830.]

93. Proposed by G. B. M. ZERR, A. M., Ph. D., President and Professor of Mathematics in Russell College, Lebanon, Va.

While surveying in a level field I notice a mountain behind a hill. Wishing to know the height of each I take the angles of elevation of the tops of both and find them to be $\beta=45^\circ$, $\delta=40^\circ$, I then measure a straight line $a=400$ feet and find the angles of elevation of the tops to be $\gamma=42^\circ$, $\mu=38^\circ$. After measuring $b=300$ feet more in the same straight line I find the elevations to be $\lambda=40^\circ$, $\nu=36^\circ$. Find the height of each.

⁂ Solutions of these problems should be sent to B. F. Finkel, not later than May 10.

CALCULUS.

73. Proposed by MOSES COBB STEVENS, A. M., Professor of Mathematics, Purdue University, Lafayette, Ind.

$$\text{Solve} \int_0^{\frac{1}{4}\pi} \log(1-\tan x)dx$$

74. Proposed by EDWARD R. ROBBINS, A. B., Mathematical Master in the Lawrenceville School, Lawrenceville, N. J.

A circular ring, whose radii are a and b, is cut by a plane making the area of the section (or sections) a maximum. Required the position of the plane, and the nature and area of the section (or sections).

⁂ Solutions of these problems should be sent to J. M. Colaw, not later than May 10.

DIOPHANTINE ANALYSIS.

64. Proposed by JOHN M. COLAW, A. M., Monterey, Va.

Find two cubic proper fractions whose product is a square proper fraction. Can a *general* solution be made?

65. Proposed by F. P. MATZ, D. Sc., Ph. D., Professor of Mathematics and Astronomy, Irving College, Mechanicsburg, Pa.

Find (1) four consecutive numbers whose sum is a square, and (2) four consecutive numbers the sum of whose squares is a square.

⁂ Solutions of these problems should be sent to J. M. Colaw, not later than May 10.

MISCELLANEOUS.

60. Proposed by G. B. M. ZERR, A. M., Ph. D., President and Professor of Mathematics, The Russell College, Lebanon, Va.

A tube of uniform cross section, small compared with its length, is bent into the form of a cycloid, its open ends lying at the cusps, and this cycloid is placed with its axis vertical and its vertex downwards. Equal quantities of fluids of specific gravity σ_1 and σ_2 are poured in at the two cusps, the quantity of each being such as would fill a length of the tube equal to its axis a. If the fluids do not mix, find the distance x_1, x_2 of the upper levels of the fluids from the vertex measured along the cycloidal arc. [From *Proctor's Geometry of the Cycloid.*]

61. **Proposed by F. M. SHIELDS, County Surveyor, Coopwood, Miss.**

Of three chronometers, A, B, and C, A keeps true time; B gains 5 minutes and 15¾ seconds a day by true time, and C loses 7 minutes and 15 3-7 seconds a day by true time. The hands of all three watches are set at 12 noon on a certain day. What is the time by the true watch, A, on the *fifth* day after time when the hands of the fast watch, B, point to 12, and what is the time by the true watch, A, on the *tenth* day after time when the hands of the slow watch, C, point to 12?

⁂ Solutions of these problems should be sent to J. M. Colaw, not later than May 10.

PERIODICALS.

The Open Court. A Monthly Magazine. Devoted to Science of Religion, the Religion of Science, and the extension of the Religious Parliament Idea. Edited by Dr. Paul Carus; Assistant Editor, T. J. McCormack and Associate Editors E. C. Hegeler and Mary Carus. Price, $1.00 per year in advance. Single copies, 10 cents.

The April *Open Court* presents its readers as a frontispiece with a unique specimen of Japanese art in the shape of a brilliantly colored poster called *The Pure Land* or *Western Paradise*, by a famous Tokyo artist, Mishima. The posters were made especially for the *Open Court*, and the sheets imported from Japan. The conception is delicate, and the tints little short of exquisite.

In the leading article Dr. Woods Hutchinson, of Buffalo discourses upon Courage the Chief Virtue, which is opposed by the author to meekness and submissiveness usually taught, and contrasts the sublime fortitude of Christ to the cowardice of many interpretations of his religion. Dr. Moncure D. Conway continues his series of articles on Solomonic Literature, giving in the present number the mythological interpretation of the traditions connected with the wives of Solomon. The illustraded article of the number is by Dr. Paul Carus on the Human Heart as Mirrored in Religious Art. Old wood cuts are reproduced, portraying the various conceptions of the soul as the vehicle of good and evil, while representations of modern ideas are also given.

Captain Pfoundes of Japan writes entertainingly of the present situation in China, and his article is accompanied by a handsome half tone illustration of the Seven Sages of the Bamboo-Grove. Mr. Sandison of Glasgow reports the Gifford Lectures now being delivered in Scotland by Dr. Bruce; and Mr. Edmund Noble of Boston gives us Some Parallels Between Theology and Science. Prof. I. W. Howerth of the University of Chicago treats of the crying problems of social life. Poems, with a new hymn by Dr. Paul Carus, and a number of book reviews complete the number.

The American Monthly Review of Reviews. An International Illustrated Monthly Magazine. Edited by Dr. Albert Shaw. Price, $2.50 per year in advance. Single number, 25 cents. The Review of Reviews Co., 13 Astor Place, New York.